10. Prime Factors

Program Name: PrimeFactors.java   Input File: primefactors.dat

Given two numbers a and b, for each number in the range `[a, b]` find the sum of each number's prime factorization. For example, `a = 2,` and `b = 6.`

```
2 = 2
3 = 3
4 = 2 * 2
5 = 5
6 = 2 * 3
```

So, the sum is `(2) + (3) + (2 + 2) + (5) + (2 + 3),` which is `19.`

Input
The first integer `T` will represent how many test cases there are to follow. For each test case, there will be a line containing two numbers `a` and `b`, where `2 <= a < b <= 10^6`.

Output
For each test case print out the sum every number's prime factorization in the range `[a, b]` mod $10^7 + 9,$ `10000009.`

Example Input File
```
3
2 6
123 456
593215 853212
```

Example Output to Screen
```
19
30889
558083
```